

Flame Synthesis Of Metal Salt Nanoparticles, In Particular Calcium And Phosphate Comprising Nanoparticles

Abstract

Described is a method for the production of metal salts, wherein the cationic metal is preferably selected from Group I to IV metals and mixtures thereof and the anionic group is selected from phosphates, silicates, sulfates, carbonates, hydroxides, fluorides and mixtures thereof, and wherein said method comprises forming a mixture of at least one metal source that is a metal carboxylate with a mean carbon value per carboxylate group of at least 3 and at least one anion source into droplets and oxidizing said droplets in a high temperature environment, preferably a flame. This method is especially suited for the production of calcium phosphate biomaterials such as hydroxyapatite (HAp, $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$) and tricalcium phosphate (TCP, $\text{Ca}_3(\text{PO}_4)_2$) that exhibit excellent biocompatibility and osteoconductivity and therefore are widely used for reparation of bony or periodontal defects, coating of metallic implants and bone space fillers.